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Research Report

Topic 2: The Question of Limiting the Use of Dirty Stoves in Asia



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Introduction

The use of dirty stoves is a large problem all over the world, especially in Asia. When using the term “dirty stoves” we refer to cooking installations that are powered by biomass such as wood or tree-bark. These traditional methods of cooking add to global warming, deforestation and form a dangerous hazard to people’s health, causing respiratory problems. For the local population, however, it is a cheap alternative to using gas or fuel because the wood used in the stoves is often gathered in nearby forests.

Key Terms

Dirty Stoves: Indoor cooking devices that use solid fuels.

Deforestation: the action or process of clearing of forests;

Solid Fuels: Fuels that are solid (not gas/oil), this consists of wood, charcoal, dung etc.

Main Body

Since the beginning of human life, we have prepared food over a burning fire. With the industrial revolution, this slowly changed to electrical or gas-powered devices in the western world. Many people in LEDC’s however are unable to afford these more technologically advanced techniques. Therefore, these people resort to burning ‘solid fuels’ such as wood, dung or hay, which the women usually collect. These are burned inside the house on open fires or simple stove-like contraptions. This causes many problems which this report will outline below.

¹Health

The largest problem that comes with the use of dirty stoves are the health of the mothers and young children, who spend a lot of time inhaling the smoke. This is known to cause pneumonia, chronic respiratory disease, heart disease, low birth weight, and tuberculosis. The deaths caused by these diseases can be seen in the table below. On the left side you see the percentage of people using solid fuels in the region and on the right the number of people dying from respiratory diseases. The WHO regions refer to the 6 regional groupings as referred to by the WHO: African Region, Region of the Americas, South-East Asia Region, European Region, Mediterranean Region and the Western Pacific Region. ²

¹ [NIEHS][Unknown][, ehp.niehs.nih.gov/118-a124/.]

² [NIEHS][Unknown][, ehp.niehs.nih.gov/118-a124/.]

Figure 4: Widespread solid fuel use ...

Percentage of population using solid fuels, by WHO subregion¹, 2003 or latest available data

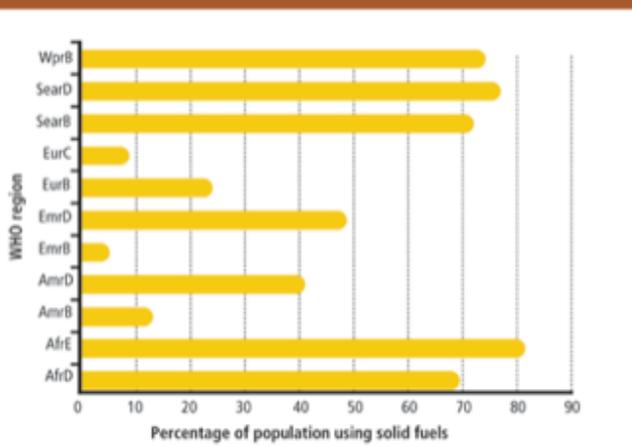
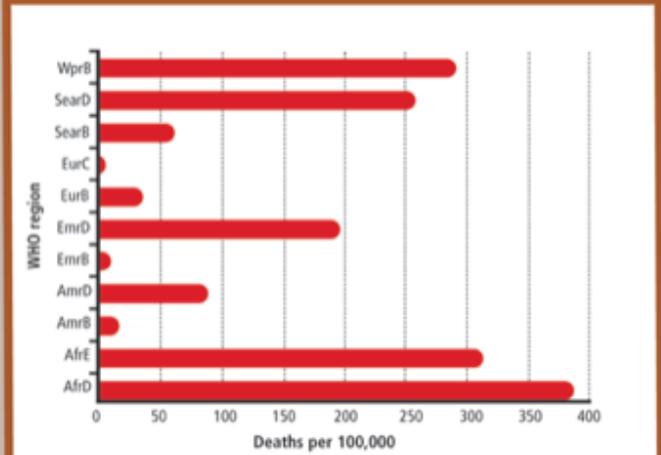


Figure 5: ... translates into respiratory deaths

Deaths attributable to indoor air pollution per 100 000 population, by WHO subregion¹, 2002



The smoke inhaled from the stoves mostly (for 90%) consists of CO (Carbon Monoxide). A small part however consists of “particulate matter” such as PM₁₀ or PM_{2.5}. These extremely small particles are the reason why inhaling smoke is so bad because they penetrate deep into the airways and lungs. In comparison, the WHO recommends no more than exposure to 50 µg/m³ PM₁₀ for 24 hours, in homes that use dirty stoves this is often 300-3000 µg/m³. In European cities cars are often banned from the centre due to their emission of particulate matter. ³

The Environment

In addition to being a health hazard, the use of dirty stoves is also bad for the environment. The soot from the stoves often blankets a village and adds to the amount of CO₂ in the air, thus adding to global warming. Burning wood is twice as pollutant as diesel when it comes to particle pollution and is therefore also harmful to the environment. ⁴

The wood that isn't gathered by local women but bought is often logged illegally. Of course, this also has environmental consequences. The trees can no longer take in carbon dioxide after they are cut down and deforestation also destroys the habitat of many animals.

³ [NIEHS][Unknown][, ehp.niehs.nih.gov/118-a124/.]

⁴ [Fuller, G.][11.12.2016.][22.12.2017][www.theguardian.com/environment/2016/dec/11/why-logs-twice-dirty-diesel-pollutionwatch.]

Relevant Countries

China:

China is perhaps the most successful when it comes to introducing cleaner cooking stoves. In 1980 China launched a program where they encouraged local designers to make cleaner stoves in combination with the central distribution of key parts. Today about 150 million of these stoves are still in use.⁵

India:

India started a program around the same time as China, however none of the original stoves are still in use. A newer program (2009) , the National Biomass Cookstove Initiative aims to replace old stoves with newer more durable ones.⁶

Relevant Organisations

WHO:

The World Health Organisation has conducted many studies and trials when it comes to the issue of dirty stoves, some of these are: *Household Energy and health*, *The Global Burden of Disease: 2004 update* and many others. The main aim of the WHO is to stop the large number of deaths from respiratory diseases. One way to achieve this is to introduce cleaner stoves to local communities.⁷

UNHCR:

Seeing as a lot of refugees all over the world also use dirty stoves, the UNHCR is also a major party involved. In 2010 the UN high commissioner for refugees together with the Clinton Global Initiative launched the Global Alliance for Clean Cookstoves. This alliance also aims to replace dirty stoves with clean ones.⁸

Relevant UN Resolutions

WHO(02)/W628

These guidelines combine much research into indoor air pollution, fuel use, health risks and policy considerations.

⁵ [NIEHS][Unknown][, ehp.niehs.nih.gov/118-a124/.]

⁶ [NIEHS][Unknown][, ehp.niehs.nih.gov/118-a124/.]

⁷ [NIEHS][Unknown][, ehp.niehs.nih.gov/118-a124/.]

⁸ [Delarue, O.][24.10.2010][22.12.2017][www.unhcr.org/en-us/news/latest/2010/9/4c9cbb40be/unhcr-chief-guterres-joins-launch-new-projects-clinton-meet.html?query=New.]

In this document you can find data concerning indoor air pollution, also regarding indoor cookstoves.

To be found at:

<http://unbisnet.un.org:8080/ipac20/ipac.jsp?session=D515704043H9T.93687&menu=search&aspect=subtab124&npp=50&ipp=20&spp=20&profile=bib&ri=2&source=~%21horizon&index=.SW&term=air+pollution&x=0&y=0&aspect=subtab124>

Previous Attempts to Solve the Issue

As mentioned before many countries and organisations have tried to solve this issue, with varying amounts of success. Almost all initiatives (Global Alliance for Clean Cookstoves, National Biomass Cookstove Initiative etc.), aim to introduce clean, fuel-efficient stoves to the local community. Many people find that these stoves are too expensive and do not see the risk they put themselves and their children in. China's approach seems to be the most efficient due to the combination of local designs and centrally produced key parts.⁹¹⁰

Possible Solutions

There are several possible solutions to solve this problem. The first is to do nothing at all and focus on closing the gap between LEDC's and MEDC's. When the wealth of the local people increases, they will most likely turn to newer stoves.

This is, of course not a very sustainable solution. A more permanent solution would be to teach local people to make clean stoves and explain the dangers of using dirty stoves. In order to have the most success, these stoves should be easily made and very durable. In addition, they should be very cheap.

⁹ [Delarue, O.][24.10.2010][22.12.2017][www.unhcr.org/en-us/news/latest/2010/9/4c9cbb40be/unhcr-chief-guterres-joins-launch-new-projects-clinton-meet.html?query=New.]

¹⁰ [World Bank][03.11.2014][22.12.2017][www.worldbank.org/en/news/feature/2014/11/03/cleaner-cook-stoves-for-a-healthier-indonesia.]

However, this still doesn't solve the issue of having to use expensive fossil fuels to power these stoves. Therefore, we should also research ways to get affordable fuels to countries and communities in need of cleaner cookstoves. A solution might be the rapidly increasing success that is biofuels.

Bibliography

[Delarue, O.][24.10.2010][22.12.2017][www.unhcr.org/en-us/news/latest/2010/9/4c9cbb40be/unhcr-chief-guterres-joins-launch-new-projects-clinton-meet.html?query=New]

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[NIEHS][Unknown][, [ehp.niehs.nih.gov/118-a124/.](http://ehp.niehs.nih.gov/118-a124/)]

[World Bank][03.11.2014][22.12.2017][www.worldbank.org/en/news/feature/2014/11/03/cleaner-cook-stoves-for-a-healthier-indonesia.]